

# PATENT SPECIFICATION

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## DRAWINGS ATTACHED

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## (54) IMPROVEMENTS IN OR RELATING TO MOTOR VEHICLES

- (71) We, CHRYSLER UNITED KINGDOM LIMITED, a British Company, of Bowater House, 68 Knightsbridge, PO Box 441, London, S.W.1., do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—
- 10 This invention relates to motor vehicles. The invention provides a motor vehicle having a passenger compartment, a rigid open framework around the passenger compartment, an engine compartment constructed to collapse towards the passenger compartment on impact of a load in excess of a predetermined amount, means mounted on the framework to guide an engine located in the compartment beneath the passenger compartment during collapse of the engine compartment towards the passenger compartment, a rigid cross-member at the end of the engine compartment remote from the passenger compartment, at least one energy absorbing device provided to act between the cross-member and the framework, a second rigid cross-member at the opposite end of the vehicle to the first mentioned cross-member, and at least one energy absorbing device provided to act between the second cross-member and the framework.
- 35 The guide means may comprise a rigid arm pivotally mounted on the framework for rotation about an axis extending horizontally across the vehicle, the arm being inclined downwardly from said mounting to engage the engine and the length of the arm being such that on movement of the engine towards the passenger compartment the arm guides the engine below the compartment.

45 Preferably two such arms are pivotally mounted on the framework side by side one another to engage the engine on either

side thereof.

In an alternative construction the guide means may comprise a rigid cam mounted on the framework having a cam surface shaped to guide the engine downwardly 50 below the passenger compartment on movement towards the compartment.

The vehicle may have a further compartment (e.g. a luggage boot) at the opposite end of the passenger compartment 55 to the engine compartment which further compartment is also constructed to collapse towards the passenger compartment on impact of a load above a predetermined amount, the said second 60 rigid cross-member being located at the end of the further compartment remote from the passenger compartment.

An exterior bumper bar may be mounted on the or each cross-member. 65 Preferably the or each bumper bar is resiliently mounted on the respective cross-member.

The following is a specific description of an embodiment of the invention reference being made to the accompanying diagrammatic drawings in which:— 70

Figure 1 is a side view of a front engined rear wheel drive motor vehicle showing reinforcement and energy absorption 75 arrangements,

Figure 2 is a similar view to Figure 1 showing engine guide arrangement, and

Figure 3 is a plan view of the reinforcement and energy absorbing arrangements 80 of the vehicle shown in Figure 1.

Referring firstly to Figure 1 of the drawings there is shown a motor vehicle 10 having a passenger compartment 11, an engine compartment 12 and a luggage boot 85 13. The passenger compartment is reinforced by a rigid frame comprising a pair of uprights 14 at the forward end of the compartment connected by cross-members 15, a pair of uprights 16 at the rearward 90

end of the compartment connected by cross-members 17 and fore and aft extending members 18. The engine and boot compartments are constructed to collapse on impacts above a predetermined force.

Referring now to Figure 2 of the drawings the forward uprights 14 are additionally connected at the scuttle height of the passenger compartment by a rigid cross-member 19. An engine 20 is mounted in conventional manner in the engine compartment 12. Two rigid arms 21 (only one of which can be seen) are pivotally mounted side by side on the cross-member 19 for rotation about a horizontal axis extending across the vehicle. The arms extend forwardly and downwardly and are pivotally connected to the engine on either side thereof. The length of the arms is such that if the engine is moved rearwardly by impact of the front of the engine compartment, the engine is guided by the arms downwardly below the passenger compartment. Thus impact of the engine on the passenger compartment is avoided.

Referring now to Figures 1 and 3 of the drawings a rigid cross-member 22 of open or closed hollow cross-section extends across the forward end of the engine compartment. The member is connected to the cross-member 19 of the passenger compartment frame by two energy absorbing devices 23 so that the force of an impact on the front of the vehicle is absorbed by the device 23. A front bumper bar 24 is mounted on the cross-member 22 by springs 25 which resist movement of the bumper towards the cross-member and serve to absorb light impacts on the bumper.

At the rear of the back of the vehicle there is a further cross-member 26 of open or closed hollow cross-section connected by energy absorbing devices 27 to the rear uprights 16 of the passenger compartment frame to absorb the force of an impact on the rear of the vehicle and a rear bumper bar 28 is spring mounted at 29 on the cross-member to absorb light impacts on the bumper.

#### WHAT WE CLAIM IS:—

1. A motor vehicle having a passenger compartment, a rigid open framework around the passenger compartment, an engine compartment constructed to collapse towards the passenger compartment on impact of a load in excess of a predetermined amount, means mounted on the framework to guide an engine located in the compartment beneath the passenger compartment during collapse of the engine compartment towards the passenger com-

partment, a rigid cross-member at the end of the engine compartment remote from the passenger compartment, at least one energy absorbing device provided to act between the cross-member and the framework, a second rigid cross-member at the opposite end of the vehicle to the first mentioned cross-member, and at least one energy absorbing device provided to act between the second cross-member and the framework.

2. A motor vehicle as claimed in claim 1 wherein the guide means comprises a rigid arm pivotally mounted on the framework for rotation about an axis extending horizontally across the vehicle, the arm being inclined downwardly from said mounting to engage the engine and the length of the arm being such that on movement of the engine towards the passenger compartment the arm guides the engine below the compartment.

3. A motor vehicle as claimed in claim 2 wherein two such arms are pivotally mounted on the framework side by side one another to engage the engine on either side thereof.

4. A motor vehicle as claimed in claim 1 wherein the guide means comprise a rigid cam mounted on the framework having a cam surface shaped to guide the engine downwardly below the passenger compartment on movement towards the compartment.

5. A motor vehicle as claimed in any of the preceding claims wherein the vehicle has a further compartment (e.g. a boot) at the opposite end of the passenger compartment to the engine compartment which further compartment is also constructed to collapse towards the passenger compartment on impact of a load above a predetermined amount, the said second rigid cross-member being located at the end of the further compartment remote from the passenger compartment.

6. A motor vehicle as claimed in any of the preceding claims wherein an exterior bumper bar is mounted on the or each cross-member.

7. A motor vehicle as claimed in claim 6 wherein the or each bumper bar is resiliently mounted on the respective cross-member.

8. A motor vehicle substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

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Fig.1.

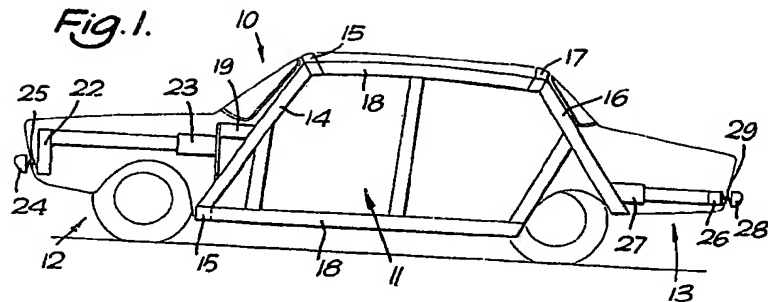


Fig.2.

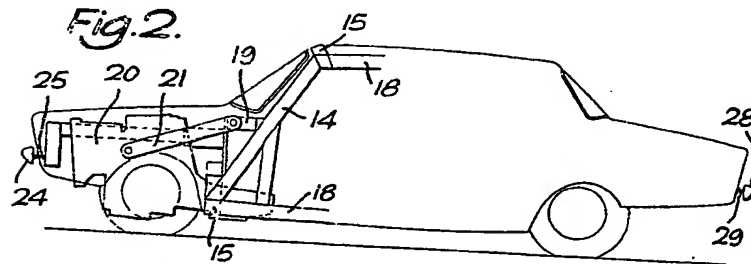
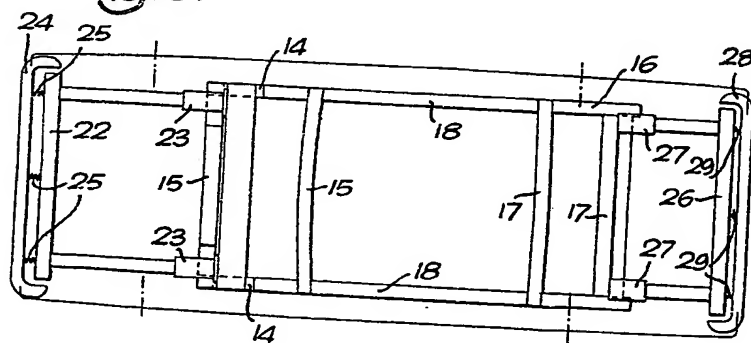


Fig.3.



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